

Brief description of dilatancy Technology

Basis Technology. The technology put to use a special method was prepared and conducted by an explosive impact, generating an array of rocks uneven dynamic load, the action which manifests the effect of dilatancy, which leads to softening and weakening the structure of the processed array.

Purpose. Dilatancy technology is designed for use in various sectors of the mining industry. The most favorable conditions for its application are opened in oil and gas industry as the technology of enhanced oil recovery.

Knowledge intensive. Dilatancy technology is a knowledge-based technology, its development with subsequent approbation has been spent over 30 years.

Uniqueness. Dilatancy technology is unique and has no analogues.

Ready. The technology is ready for industrial use.

Testing. The technology has been tested on dozens of oil, gas and water wells, as in the CIS countries, as well as in foreign countries (USA, China) always with a positive effect.

Efficiency. Dilatancy technology is the most effective technology for enhanced recovery of underground fluids of a new generation.

Monitoring. Many people treated with dilatancy technology wells were under observation for 3 to 5 years. Obtained from monitoring results confirmed the predicted theoretical assumptions about its effectiveness.

The duration of effect. The observations of the treated wells showed that the positive effects are the increase in workover, there is (depending on the specific geological conditions) of 6 ... 8 months to several years.

Predicted results. Dilatancy technology allows still at the stage of laboratory research core material to predict the magnitude of positive effect, which is obtained after processing the well by this method.

Practical application. How dilatancy technology is difficult from a theoretical point of view, so it just in the practical application and can be used in the processing of wells in practically worked out in force, or put into operation new fields of underground fluids.

Individual approach. Each hole is unique. Prior to treatment with dilatancy technology each well is tested comprehensively, and held both standard and special laboratory studies, on which given "special recipe treatment" of each individual well.

Branch spectrum of dilatancy Technology

Dilatancy technology, having many positive testing and having a wide range of sectoral applications can be effectively used for:

- the intensification of oil, gas and gas condensate;
- to stimulate production of methane of coal seams;
- in geothermal energy;
- In the development of deposits of crystalline materials, including diamonds;
- to stimulate production of rare earth metals, gold and uranium concentrate by their in-situ leaching;
- a separate line item should be noted, however, that having a significant market value, dilatancy technology can be used as a financial tool that can increase their capitalization and operating efficiency, the international financial and stock market.

Then we give a brief description of dilatancy technology on the above major industry trends.

1. Oil, gas and gas condensate

Base effects that dilatancy technology, is projected to increase productivity of oil, gas and condensate wells after treatment with its application.

With the use of dilatancy technology productivity of oil wells (on average) may be increased by 1,5-2 times and more, condensate in the 2-3 or more times, and gas wells in the 3-5 or more times.

At the same time in its value terms it is much greater than most common at the moment technology stimulation underground fluids - hydraulic fracturing of formation (EMG).

Together with the technology of jet-pulsed scheleobrazovaniya and termogazodinamicheskoy sinking sidetracks small diameter, it has almost all advantages of both technologies, eliminates the initial perforation, while remaining economically more attractive.

2. Methane of coal seams

Economically justified ahead of mining methane from reservoirs kamennouolnyh (Coalbed Methane) is impossible without preliminary intensification of productive methane wells.

Hydraulic fracturing (EMG) is the only technology that is used widely for this purpose. But even such a leader in this field as a company Schlumberger acknowledges the lack of effectiveness of technology in hydraulic fracturing of coal structures.

According to our estimates in the case of dilatansionnoi technology for intensification of productivity methane wells their effectiveness may be increased to at least one and a half - two times, and the profitability of "methane" business in this case is likely to equal or even exceed the performance of these conventional gas projects.

3. Geothermal Energy

Recently there has been an increased interest of large energy and oil and gas companies to geothermal

energy and, in particular, to geothermal projects on the basis of HOT DRY ROCK concept, using which is potentially possible to build geothermal plant anywhere on the planet.

However, geothermal projects based on this concept can not yet be economically attractive to financial institutions due to the fact that the fundamental problem - the creation of highly efficient heat exchanger underground reservoir - remains unresolved. To date, all known technologies intensification geotechnical boreholes can not effectively solve this problem.

Dilatancy technology is the only technology, the use of which can radically solve the aforementioned problems.

Background

The concept of HDR technology was first proposed in 1972 by a group of scientists from the National Laboratory Los Alamos (USA).

The ultimate goal of implementing this concept is the potential to build geothermal power virtually anywhere in the world, because more than 99% of the mass of the planet has a temperature above 1000 ° C.

Over the past years have been implemented or are in the process of implementing a number of HDR projects:

Fenton Hill (USA);

Hijiori (Japan);

Ogachi (Japan);

Urach (Germany);

Rosemanowes (UK);

Fjallbacka (Sweden);

Soultz (France);

Basel, Geneva (Switzerland);

Reykjanes, Nesjavettir, Krafla (Iceland), etc.

However, despite enormous effort and cost (about \$ 1 billion) has so far not implemented any project cost-effectiveness of which would have been proven and would not cause a doubt.

The concept is very simple. Through an injection well under the pressure of water flow, which circulates through the artificially created in the rock at a depth of several kilometers heat exchanger tank. Passing through the heat exchanger tank, water is heated, and applied to the surface (170 ... 220 ° C) through a productive wells, where it is used to generate electricity - used the same (70 ° C) water is again pumped into injection wells.

The main problem of HDR technology and developed on the basis of its projects due to the low permeability granitic rocks at great depth (3500 to 6000 meters), from an economic point of view requires a significant investment on the artificial creation of an underground heat exchanger tank.

Hydraulic fracturing of formation is so far the only technology used to create an underground heat exchanger shell, but the degree of technological and economic efficiency of this technology is clearly insufficient for the realization of attractive from an investment point of view of a geothermal project on the basis of HDR technology.

In the case of solving this fundamental problem is projected on the immediate appearance in the U.S. and in Europe market geothermal capacity from 50 to 70 billion U.S. dollars.

In the case of dilatancy the main problem of modern technology of geothermal energy within the HDR concept - the creation of highly efficient heat exchanger underground reservoir - can be solved most preferable method as with the technical and technological, and economic terms.

4. Production of crystalline materials, including diamonds

Scientific and technical specialists of our company in the period from 3 August to 5 September 1982, was conducted full-scale experiment on the basis of Udachinskogo Mining, quarry tube "successful".

Exploded ore each block separately processed at the concentration plant № 11. Among the products of the three-day factory for each of the blocks - the experimental and control, samples were taken of crystals to assess the extent of their damage. The results of this evaluation, carried out by AK "Alrosa" to the following conclusions:

Harming the crystals in the application of technology, dilatancy, on average, 28% less than for blasting operations using conventional technology. This effect is most noticeable for the large crystal jewelry value. Separately, it should be noted: the effective use of technology is possible dilatancy for both terrestrial and underground mining, the relevance of which increases with each passing day as a result of depletion of ground deposits.

5. Extraction of rare earth metals, gold and uranium concentrate by means of their in-situ leaching

Even today there is an urgent need to develop deposits of rare earth metals, gold and uranium concentrate using the technology of underground leaching.

Compared with traditional methods used to open or pit mining this production method is more efficient in economic terms and more environmentally safe.

If the intensification of productivity geotechnological wells will be used dilatancy technology, it will increase the economic efficiency of the method of underground leaching, which would significantly increase the

investment attractiveness of projects of production of rare earth metals by in-situ leaching. Application of dilatancy technology will become even more relevant in the implementation of projects that are on the verge of profitability associated with the development, for example, the richest mineral resources in circumpolar Urals.

Moreover, the use of technology will increase the coefficient of dilatancy recovery of rare earth metals have already developed or planned for development of new deposits, as well as allow for the development of deposits of rare earth metals previously considered a variety of reasons to be unprofitable.

6. Dilatancy technology as a financial tool

So far we have talked only about the fact that dilatancy technology can generate economic benefits only as certain technological tool.

In fact, the dilatancy technology, being the subject of intellectual property, after passing through the procedures for its evaluation in accordance with either the Russian legislation, or in accordance with International Accounting Standard (IFRS), may be transferred to the balance of the service technology company in the form of intangible asset.

Since the projected cost of the asset is significant even for the leading Russian energy and commodity companies, the use of such intangible assets as a financial tool opens up broad prospects and opportunities, both in front of the service technology company, and before its possible partners in the Russian energy and resource companies for joint function and work in the international financial and stock market.

The main positive effects of the use of such financial instrument, are evident, and they are as follows:

- minimize the cost of bringing to implement their competitive strategies, "their" financial capital;
- rapid growth of capitalization companies;
- effective strategies mergers and acquisitions at the corporate level;
- improving financial and economic performance of companies and a corresponding improvement «PR indicators" corporate accountability for the independent external investors.

Conclusion

With a sufficiently large set of positive qualities, it is necessary to mention some of the complexities involved in its industrial application - namely, high research intensity and the consequent need to pre-selection, acquisition and processing of large amounts of input data for development projects VIOPZ. Therefore, at the initial stage of application appropriate to establish a service company with the participation of developers to design and create industry-standard patent confirming the originality and uniqueness for sale on a licensed basis and to avoid or minimize the common mistakes at this stage of the application.

Thus, we can consider dilatancy technology not only as a means of increasing the efficiency of extraction of minerals, but also as a kind of tool to obtain significant benefits to financial and economic nature.